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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/046,121	03/20/1998	BARBARA A. HALL	EN998028	1830

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EXAMINER

WONG, ALLEN C

ART UNIT	PAPER NUMBER
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2613

DATE MAILED: 11/27/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/046,121

Applicant(s)

HALL ET AL.

Examiner

Allen Wong

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6,8,10,14,19,27,29 and 30 is/are allowed.
- 6) ☒ Claim(s) 1-5,7,9,12,13,15-18,20-26,28 and 31-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. In view of the appeal brief filed on 9/18/02, PROSECUTION IS HEREBY REOPENED. A new ground of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

- (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
- (2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

2. Applicant's arguments with respect to claims 1-5, 7, 9, 12, 13, 15-18, 20-26, 28, 31-38 have been fully read and considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7, 9, 12, 13, 15-18, 20-26, 28 and 31-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uz (5,682,204) in view of Resnikoff (5,148,498).

Regarding claim 1, Uz discloses a method for encoding a frame, comprising:
using intra-frame statistics to determine without reference to another frame whether said frame includes a random noise portion and a normal video portion (col.3, lines 25-27; note intra-frame encoding is used and note Uz discloses "significant detail" is determined in a video frame, thus statistics are gathered from the intra-frame encoding process; also, the frame has the normal video portion along with the portion with significant detail, ie. random noise portion; col.16, lines 1-37, Uz discloses that actual pictures or normal video portion contains distortion or random noise), and if so, then for each macroblock of said frame:

(i) determining a macroblock activity level (col.8, lines 27-35; an activity level is measured which is the same as the determination of an activity level);

(ii) determining when said macroblock activity level exceeds a predefined threshold (see figure 3; note that a threshold is set and a determination means must exist to determine when the activity threshold is passed so that a course of action will be taken due to the determination of whether the macroblock activity level exceeds a predefined threshold), wherein said macroblock activity level exceeding said predefined threshold indicates that said macroblock is associated with said random noise portion of said frame; and

(iii) adjusting encoding of said macroblock when said macroblock activity level

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exceeds said predefined threshold to conserve bits used in encoding said macroblock (see figure 3; note that if a threshold is exceeded, then intercoding is used which thereby reduces the bit-rate and conserve bits used in encoding said macroblock) by biasing coding of said macroblock associated with said noisy portion of said frame towards predictive coding (col.9, lines 4-12, lines 36-43; please note that Uz does teach the biased coding of macroblocks towards "inter-coding" or predictive coding, thus this "bias" is used to encode macroblocks towards predictive coding) and thereby save bits otherwise used to encode said random noise portion of said frame and provide a more constant picture quality due to encoding of the frame.

Although Uz does not specifically disclose the limitation of "determining whether said frame includes a noisy portion, and if so, then for each macroblock of said frame" and the preservation of more bits for the less noisy area (ie. normal video portion) of an image at the expense of the highly complex image area (ie. random noise portion) of the frame, Resnikoff teaches the determination of noise in frames (see figs. 2-3; in col.10, lines 3-20, Resnikoff discloses that the input image is subjected to the image transformer and note in fig.3, the original input image 72 is generated into four arrays of coefficients 74-77 where 74 is the LL set, the lower frequency information that is more important to human viewing or the normal video portion, and elements 75-77 (LH, HL and HH set of coefficients), the less important video information or the random noise portions elements 75-77, are allocated by zero bits, thus preserving more bits for the LL set element 74 or the normal video portion; clearly, the noisy portion of a frame is determined and that frames are comprised of macroblocks). Therefore, it would have

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been obvious to one of ordinary skill in the art to combine the teachings of Uz and Resnikoff for noise reduction and adaptive encoding so as to provide accurate, efficient encoding schemes for producing high quality images.

Note claims 2, 3, 17, 24, 25, 31, 37 and 38 have similar corresponding elements.

As for claims 7 and 28, Uz discloses motion estimation process done on said macroblock (col.11, lines 20-26).

Regarding claims 9, 22-23 and 35-36, Uz discloses the determination of adjusted quantization level for use in encoding a macroblock (col.12, lines 50-53).

Regarding claims 4, 18 and 32, Uz discloses the comparison of "total activity of a frame macroblock" (col.5, lines 62-63). However, Uz fails to disclose the comparison of a minimum activity level of said order with a next to minimum activity level of said order to derive said activity level for said macroblock as disclosed by the applicant.

Therefore, it would have been obvious to one of ordinary skill in the art to compare the minimum activity level of said order with a next to minimum activity level of said order to derive said activity level for said macroblock for encoding accuracy and efficiency.

Regarding claim 5, Uz does disclose the calculation of average activity (col.11, lines 12-13) in frame macroblocks. However, Uz fails to teach the comparison of a minimum activity level with an average activity level in said multiple blocks of said macroblock. Therefore, one of ordinary skill in the art would obviously do a comparison of a minimum activity level with an average activity level in said multiple blocks of said macroblock for improving encoding accuracy and efficiency.

As for claims 12 and 13, Uz discloses a measure of a frame complexity value

(col.12, lines 60-64). However, Uz fails to teach the calculation of a complexity threshold and the comparison of said frame complexity value. Therefore, it would have been obvious to one of ordinary skill in the art to calculate a complexity threshold from a group of frames, since an activity threshold can be calculated, and a comparison of complexity values is obvious to do from a group of complexity values for improving encoding accuracy and speed.

As for claims 15, 16, 20 and 33, one of ordinary skilled in the art would obviously recognize that all digital devices require the flagging of ones and zeroes since digital logic dictates the well known use of a binary system in digital communications.

Regarding claim 26, Uz does teach the determination of an activity level (col.8, lines 27-35; the measure of an activity level is the determination of an activity level). However, Uz fails to disclose the comparison of a minimum activity level of said order with a next to minimum activity level of said order to derive said activity level for said macroblock as disclosed by the applicant. Therefore, it would have been obvious to one of ordinary skill in the art to compare the minimum activity level of said order with a next to minimum activity level of said order to derive said activity level for said macroblock for encoding accuracy and efficiency.

Note claims 21 and 34 have similar corresponding elements.

Allowable Subject Matter

Claims 6, 8, 10, 14, 19, 27, 29 and 30 are allowed over the prior art.

The following is a statement of reasons for the indication of allowable subject matter: the applicant incorporated the allowable subject matter into an independent form along


with the intervening claim limitations. The combination of limitations in the independent claims 6, 8, 10, 14, 19, 27 and 29 were not taught in the prior art and are patentable.

with the intervening claim limitations. The combination of limitations in the independent claims 6, 8, 10, 14, 19, 27 and 29 were not taught in the prior art and are patentable.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen Wong whose telephone number is 703-306-5978. The examiner can normally be reached on Mon-Thur from 8 to 6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Kelley, can be reached on (703) 703-305-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.


CHRIS KELLEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600